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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,704	05/24/2004	Alex Colvin	81100109	3703
46535	7590	02/15/2006		
BIR LAW, PLC/FGTL 45094 MIDDLEBURY COURT CANTON, MI 48188-3215			EXAMINER MCCALL, ERIC SCOTT	
			ART UNIT	PAPER NUMBER
			2855	

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/709,704

Applicant(s)

COLVIN ET AL.

Examiner

Eric S. McCall

Art Unit

2855

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance, except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 7, 8, 12-27, 29-32 and 35 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5, 6, 9-11, 28, 33 and 34 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**PORTABLE VEHICLE EXHAUST FLOW SENSOR**

**FINAL OFFICE ACTION**

In response to the Applicant's amendment dated Dec. 02, 2005.

**SPECIFICATION**

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. The Applicant's cooperation is requested in correcting any errors of which the Applicant may become aware of in the specification.

**CLAIMS**

**35 U.S.C. § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 12-21, 23-27, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Weigand (5,837,903).

With respect to claim 1, Weigand teaches a method for real-time determination of exhaust gas flow through an exhaust pipe of a vehicle (Fig. 1), the method comprising:

- measuring a pressure difference upstream (22) and down-stream (24) of a screen (18);
- measuring exhaust gas temperature (23; col. 2, lines 57-59); and
- determining the exhaust gas flow based on the pressure difference and the temperature (col. 2, lines 59-63).

With respect to claim 12, Weigand discloses the screen (18) covering “substantially” the entire area of the exhaust pipe as claimed (Fig. 1).

With respect to claim 13, the screen mesh of Weigand is interpreted as generating a measurable pressure difference while minimizing back pressure and the formation of condensation on the screen.

With respect to claim 14, the screen of Weigand is deemed as including “about” six strands per inch arranged in a generally rectangular array that extends across the exhaust pipe as claimed.

With respect to claim 15, Weigand teaches a portable system for determining exhaust gas flow of a vehicle, the system comprising:

a tube (12) adapted for placement on an exhaust pipe of the vehicle, the tube including a flow restricting element (18) extending “substantially” entirely across a cross-sectional area of the tube, a first port (22) disposed upstream of the flow restricting element for measuring a first pressure, and a second port (24) disposed downstream of the flow restricting element for measuring a second pressure; and

a device in communication with the tube for determining the exhaust gas flow based on a difference between the first and second pressures (col. 2, lines 59-63).

With respect to claims 20, 21, 23, 24, and 27, Weigand suggests the claimed subject matter thereof.

With respect to claim 32, Weigand teaches a portable exhaust gas flow sensor for real-time on-board measurement of exhaust gas flow from a vehicle, the sensor comprising:

a straight tube (12) for connecting to an exhaust pipe of the vehicle, the tube including an interior screen (18) to generate a pressure drop as exhaust gas flows across the screen, an

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upstream port (22) for measuring pressure upstream of the screen, a downstream port (24) for measuring pressure downstream of the screen, and a thermocouple port (23) for measuring exhaust gas temperature;

a differential pressure transducer in communication with the upstream and downstream ports for generating a signal based on a pressure difference between the upstream and downstream ports (col. 10, lines 65+);

a thermocouple in communication with the thermocouple port for generating a signal based on temperature of exhaust gas flowing through the straight tube (col. 4, lines 26-29); and

a processor for receiving the signals from the differential pressure transducer and the thermocouple and determining exhaust gas flow based on the received signals (col. 2, lines 59-63).

35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 7, 8, 22, 29-31, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weigand (5,837,903).

Claim 4 is not deemed patentable over the prior art because claim 4 merely sets forth a mathematical manipulation of the determined exhaust flow.

With respect to claim 8, the claim merely sets forth a known relationship between differential pressure and flow.

With respect to claim 22, Weigand is silent as to the make-up of the entire screen (18). However, the use of stainless steel to make the screen, as claimed, would have been obvious to one having ordinary skill in the art.

The motivation being that stainless steel is a very common and popular material used in the making of exhaust systems and components due to the ability to withstand the corrosive nature of exhaust gas.

With respect to claims 29 and 30, Weigand recognizes the need to eliminate condensation but fails to teach a condensation trap as claimed.

However, it would have been obvious to one having ordinary skill in the art to use a condensation trap as claimed in combination with the system as taught by Weigand.

The motivation being that Weigand discloses that the presence of condensation will plug the flowmeters and sampling lines.

Claim 35 is not deemed patentable over the prior art because the claim merely sets forth a mathematical manipulation to determine the exhaust flow.

*Allowable Subject Matter*

Claims 2, 3, 5, 6, 9-11, 28, 33, and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**RESPONSE TO ARGUMENTS**

The Applicant's arguments pertaining to the rejection under 35 USC 102(b) have been considered but have not been found to be persuasive.

Specifically, the Applicant has argued with respect to claims 1, 20, 22, 23, and 32 that the applied prior art of Weigand teaches a ceramic laminar flow element and not a screen as disclosed and claimed by the Applicant. The Applicant has provided extensive arguments as to the differences between a screen and such a flow element. However, the Examiner points out that none of the said arguments support the actual claim language used by the Applicant in the independent claims. No nexus exists between the Applicant's arguments and the claim language. As such, element 18 of the Weigand teaching is interpreted as a "screen as claimed by the Applicant".



Next, the Applicant has argued with respect to claims 12 and 15 that element 18 (ie. the screen) of Weigand does not extend substantially across the cross-sectional area of the cylindrical body (12). However, the Examiner points out that the claim language does not define the word “substantially” and thus the screen (18) of Weigand is interpreted as extending substantially across the cross-sectional area of the cylindrical body (12) since it covers the majority of the cross-sectional area.

With respect to the Applicant’s arguments pertaining to claim 14, the Examiner first points out that the front edge of the cross-section of element 18 in the Weigand teaching (ie. the initial contacting portion of element 18 with the flow) is that which has been interpreted as suggesting “strands” as claimed. The Applicant has argued that the prior art of Weigand fails to teach about six strands per inch arranged in a generally rectangular array that extends across the exhaust pipe as claimed citing specific measurements of Weigand vs. their own. However, the Examiner disagrees because the Applicant has claimed “about” six strands per inch and that which is taught is deemed as being “about” six strands per inch since the Applicant has not specifically set forth the definition of “about” in the claim language.

The Applicant’s arguments pertaining to the rejection under 35 USC 103(a) have been considered. The arguments pertaining to claims 2 and 3 have been found to be persuasive and thus the rejection thereof has been overcome.

The Applicant’s arguments pertaining to claim 22 have been considered but have not been found to be persuasive. The Examiner does set forth that Weigand makes use of a ceramic.

However, the Examiner previously set forth that Weigand is silent to make-up of the “entire” screen (18) and that the use of stainless steel in such an application would have been obvious to one having ordinary skill in the art because of commonality of stainless steel in the exhaust art as demonstrated in Weigand at col. 3, lines 23-26. If Weigand explicitly set forth the use of stainless steel in the screen, the rejection would have been made under 35 USC 102 and not 35 USC 103.

The arguments pertaining to claims 29, 30, and 35 have not been found to be persuasive for the reasoning presented in the previous office action.

### **CONCLUSION**


**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric S. McCall whose telephone number is (571) 272-2183.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Eric S. McCall  
Primary Examiner  
Art Unit 2855  
Feb. 09, 2006